

1.0 OBJECTIVES

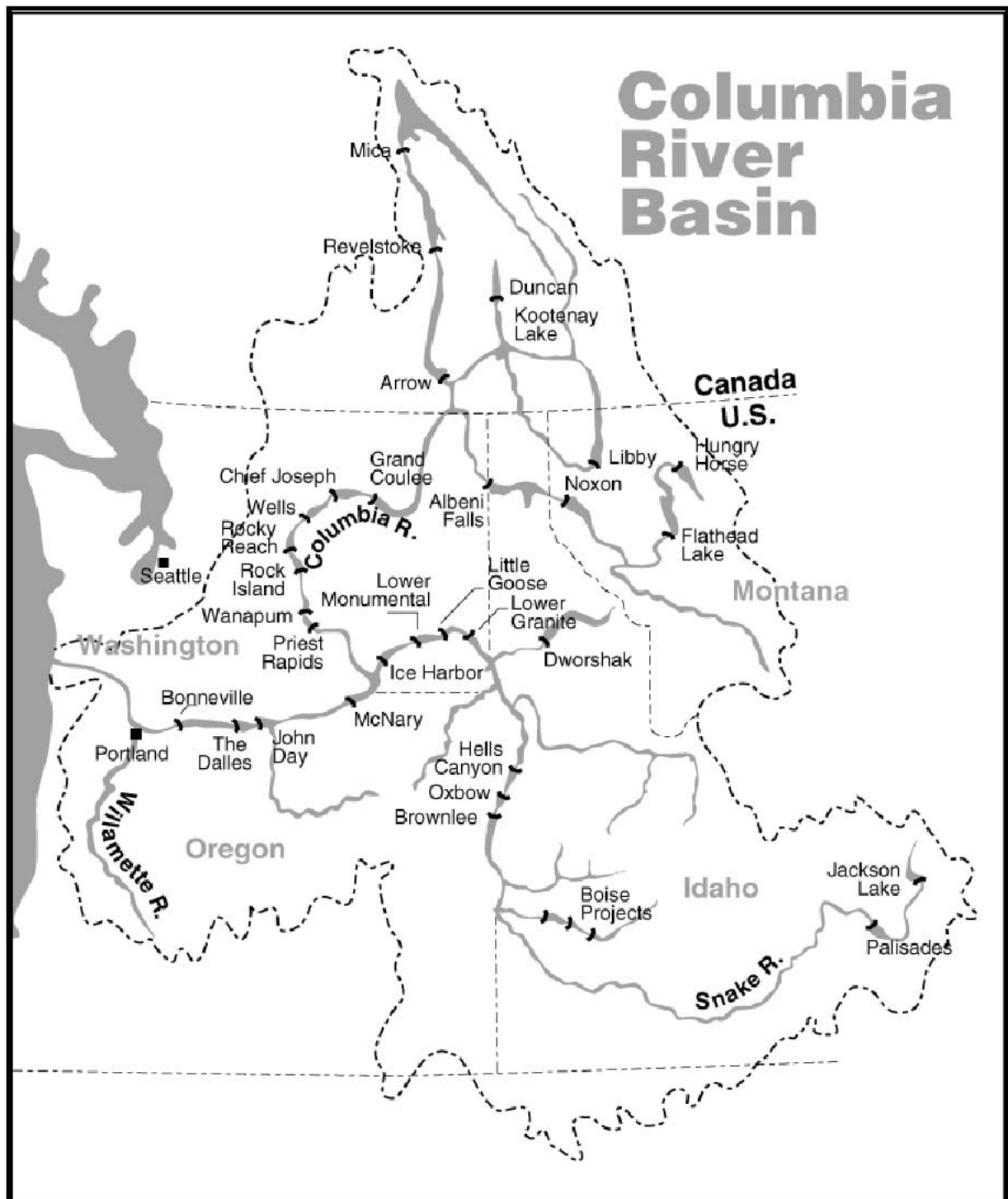
1.1 INTRODUCTION

The Endangered Species Act (ESA) (16 USC 1531-1544) established a national program for the conservation of threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service ("NOAA Fisheries"), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of species listed as endangered or threatened or to adversely modify or destroy their designated critical habitat. This is a biological opinion (Opinion) on the operation and maintenance of the Federal Columbia River Power System (FCRPS, see Figure 1.1) and 19 U.S. Bureau of Reclamation (USBR) projects and their effects on ESA-listed salmon and steelhead. It is the product of an interagency consultation pursuant to Section 7(a)(2) of the ESA and implementing regulations (50 CFR 402).

The analysis also fulfills the Essential Fish Habitat (EFH) requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Federal agencies must consult with NOAA Fisheries on all actions or proposed actions (authorized, funded, or undertaken) that may adversely affect EFH (Section 305(b)(2)).

The previous FCRPS biological opinion (hereafter referred to as the "2000 Biological Opinion") was issued on December 21, 2000, at which time NOAA Fisheries found that the action proposed by the U.S. Army Corps of Engineers (Corps), U.S. Bureau of Reclamation (USBR), and Bonneville Power Administration (BPA) (collectively, the "Action Agencies") was likely to jeopardize eight listed species of salmon and steelhead and adversely modify their designated critical habitat. NOAA Fisheries also recommended in that opinion a reasonable and prudent alternative (RPA), pursuant to ESA § 7(b)(3)(A) and 50 CFR § 402.14(h)(3). The Action Agencies subsequently decided to implement the recommended RPA through their respective records of decision. NOAA Fisheries' 2000 Biological Opinion was challenged in the case *National Wildlife Federation v. NMFS*, CR 01-640-RE (D. Oregon, filed May 5, 2001). On May 7, 2003, the District Court found the 2000 Biological Opinion invalid and remanded it to NOAA Fisheries on June 2, 2003 to consider revisions consistent with the Court's opinion of May 7, 2003. The Court also decided that the 2000 Biological Opinion should remain in effect while NOAA Fisheries and the Action Agencies developed changes in response to the Court's concerns.

Figure 1.1. Map of the major dams in the Columbia River basin, including major facilities that make up the Federal Columbia River Power System.



Since the Action Agencies had already adopted the measures contained in the 2000 Biological Opinion, they determined that it would be more appropriate for NOAA Fisheries to base this Opinion on an updated proposed action reflecting their current and planned future operations, rather than to reanalyze the proposed action set forth in the 1999 Biological Assessment.¹ Accordingly, during the consultation process, the Action Agencies developed an Updated Proposed Action (dated November 24, 2004), in which they propose to:

- Operate the 14 sets of dams, powerhouses, and reservoirs known collectively as the Federal Columbia River Power System (FCRPS). These projects are operated as a coordinated system for power production and flood control (while also effectuating other project purposes) on behalf of the Federal government under various Congressional authorities. These projects are: Dworshak, Lower Granite, Little Goose, Lower Monumental, and Ice Harbor dams, power plants, and reservoirs in the Snake River basin; Albeni Falls, Hungry Horse, Libby, Grand Coulee and Banks Lake (features of the Columbia Basin Project), and Chief Joseph dams, power plants, and reservoirs in the upper Columbia River basin; and McNary, John Day, The Dalles, and Bonneville dams, power plants, and reservoirs in the lower Columbia River basin.
- Engage in tributary and estuary habitat and hatchery improvement projects under various Congressional authorities as offsets for the unavoidable adverse effects of the FCRPS.
- Engage in scientific research and monitoring of effects on ESA-listed anadromous fish resulting from the operation of mainstem FCRPS projects on the Columbia and Snake rivers.
- USBR is also consulting on the effects of continued operation and maintenance of 19 of its projects in the Columbia River basin (Table 1.1). However, effects of the operation and maintenance of the Umatilla project have been the subject of a supplemental Section 7(a)(2) consultation, and supplemental consultation on the Yakima and Deschutes projects is expected to continue as more localized effects of those projects are identified. The Columbia Basin and Hungry Horse projects include facilities that are coordinated for multiple-use operation as part of the FCRPS. The 17 remaining projects are all operated independently but are similar to the FCRPS projects in that they have hydrologic effects on the flows of the mainstem Columbia and Snake rivers. All 19 USBR projects are authorized to provide water for irrigated agriculture, and all except Hungry Horse do so at present. USBR projects are the result of Congressional actions that provide funding and authority, beginning with the 1902 Reclamation Act and continuing with numerous other acts.

¹ The 2000 Biological Opinion also considered NOAA Fisheries' issuance of several ESA Section 10(a)(1)(A) permits, including one for the direct take of listed salmonids for the Juvenile Transportation Program. NOAA Fisheries concluded in the 2000 Biological Opinion that the issuance of these permits was not likely to jeopardize the continued existence of the affected ESUs. The Court's May 7, 2003 opinion did not identify any errors in these conclusions, and therefore there is no need to reconsider them in this Opinion. NOAA Fisheries issued the permit for the Juvenile Transportation Program on March 22, 2001, and it will expire by its terms on December 31, 2005.

USBR also operates and maintains nine “upper Snake River projects” in Eastern Oregon and Southern Idaho that are not part of this consultation, because they are the subject of a completed consultation on operation and maintenance. They are operated independently from the FCRPS for multiple uses, including the annual provision of up to 427,000 acre-feet of water for Snake River flow augmentation. The hydrologic effects of that operation are part of the environmental baseline of the FCRPS consultation through March 2005.

Table 1.1. USBR Projects in the Columbia River Basin under consultation in this Biological Opinion.

Project	Location	Subbasin or Stream
Upper Columbia River (Upstream of Snake River Confluence)		
Hungry Horse	Western Montana, north of Flathead Lake	South Fork Flat Head River
Bitterroot	Western Montana, south of Missoula	Bitterroot River
Big Flat Unit of the Missoula Valley	Western Montana, north of Missoula	Clark Fork
Frenchtown	Western Montana, north of Missoula	Clark Fork
Dalton Gardens	North Idaho, north of Coeur d'Alene	Spokane (Hayden Lake)
Avondale	North Idaho, north of Coeur d'Alene	Spokane (groundwater)
Rathdrum Prairie	North Idaho, northwest of Coeur d'Alene	Spokane (groundwater)
Spokane Valley	Eastern Washington, east of Spokane	Spokane (groundwater)
Columbia Basin	Central Washington	Columbia River
Chief Joseph Dam	North-central Washington, from Canadian border to Wenatchee	Okanogan and Columbia Rivers
Okanogan	North-central Washington, near Okanogan	Okanogan River
Yakima	Central Washington, near Yakima	Yakima River
Lower Columbia (Downstream of the Snake River Confluence)		
Umatilla	Northeast Oregon	Umatilla and Columbia Rivers
Crooked River	Central Oregon, north of Bend	Crooked River
Deschutes	Central Oregon, north of Bend	Deschutes River
Wapinitia	North-central Oregon, south of The Dalles	Deschutes River
The Dalles	North-central Oregon, near The Dalles	Columbia River
Tualatin	Northwest Oregon, west of Portland	Tualatin River (Willamette River)
Snake River		
Lewiston Orchards	West-central Idaho, near Lewiston	Clearwater River

1.2 APPLICATION OF ESA SECTION 7(a)(2) STANDARDS – JEOPARDY ANALYSIS FRAMEWORK

This section reviews the approach used in this Opinion to apply the standards for determining the likelihood of jeopardy to listed species and adverse modification of critical habitat as set forth in Section 7(a)(2) of the ESA and as defined in 50 CFR Part 402 (the consultation regulations).²

This Opinion's application of authorities has been revised to specifically address the Court's concerns and other legal precedents developed since the original Opinion was issued in December 2000. In summary, the Court found that NOAA Fisheries' purported consideration of the effects of certain future Federal and non-Federal measures was inconsistent with the consultation regulations. The Court was critical of NOAA Fisheries' reference to the future effects of certain Federal measures, because the measures were not yet the subject of a completed ESA Section 7(a)(2) consultation. The Court was also critical of NOAA Fisheries' reference to the future effects of certain non-Federal actions, because NOAA Fisheries did not evaluate whether they were "reasonably certain to occur." The Court also found that NOAA Fisheries had too narrowly defined the "action area," indicating that it should have included areas affected by non-hydro mitigation required by the reasonable and prudent alternative.

To address these concerns, NOAA Fisheries was required to change the methodology for applying the Section 7(a)(2) standards from that used in the 2000 Biological Opinion. The previous analysis depended upon a prospective, range-wide evaluation of the likelihood of survival and recovery, projecting species survival rates up to 100 years in the future under reasonable scenarios of activities that would affect survival and recovery. This analysis required an estimation of the beneficial and harmful effects of future Federal and non-Federal actions. However, in performing this future estimation, NOAA Fisheries did not evaluate whether those future actions were reasonably certain to occur or (if federal) been the subject of a completed consultation. Therefore, in comparing the effects of the action with the effects of the environmental baseline in the action area in this Opinion, NOAA Fisheries has taken steps to ensure that it is not impermissibly speculating about the beneficial or harmful effects of future actions that are not reasonably certain to occur or been the subject of a completed consultation. Notwithstanding this focus, and as required by the regulations (50 CFR § 402.14(g)), the significance of any adverse effects attributable to the proposed action will be informed by the current range-wide status of the listed ESUs and the condition of designated critical habitat.

In conducting analyses of actions under Section 7 of the ESA, NOAA Fisheries takes the following steps, as directed by the consultation regulations:

1. Evaluates the current status of the species at the ESU level with respect to biological requirements indicative of survival and recovery and the essential physical and biological features of any designated critical habitat.

² Application of the definition in these regulations of "destruction or adverse modification" (50 CFR §402.02) is under further consideration in light of a recent court decision in this Circuit, *Gifford Pinchot Task Force v. USFWS*, No. 03-35279 (9th Cir. August 6, 2004).

2. Evaluates the relevance of the environmental baseline in the action area to biological requirements and the species' current status, as well as the status of any designated critical habitat.
3. Determines whether the proposed action reduces the abundance, productivity, or distribution of the species or alters any physical or biological features of designated critical habitat.
4. Determines and evaluates any cumulative effects within the action area.
5. Evaluates whether the effects of the proposed action, taken together with any cumulative effects and added to the environmental baseline, can be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of the affected species, or is likely to destroy or adversely modify their designated critical habitat. (See CFR § 402.14(g).)

If, in completing step 5, NOAA Fisheries determines that the action under consultation is likely to jeopardize the continued existence of ESA-listed species or adversely modify designated critical habitat, NOAA Fisheries must identify a reasonable and prudent alternative (RPA) for the action that is not likely to jeopardize the continued existence of ESA-listed species or adversely modify their designated critical habitat and meets the other regulatory requirements for an RPA (see 50 CFR § 402.02).

1.2.1 Step 1: Evaluate Current Status with Respect to Range-wide Biological Requirements and Essential Features of Critical Habitat

NOAA Fisheries applies ESA Section 7(a)(2) to the listed Evolutionarily Significant Units (ESUs) of salmon and steelhead by first defining the species' range-wide biological requirements and evaluating their status relative to those requirements. The risk currently faced by each ESU informs NOAA Fisheries' determination of whether a reduction in the productivity, abundance, or distribution of the species would reasonably be expected to "appreciably reduce" the likelihood of both survival and recovery in the wild (in Step 5). The greater the current risk, the more likely that any additional risk resulting from the proposed action's effects on productivity, abundance, or distribution of the listed species will constitute an "appreciable reduction in the likelihood of both survival and recovery." Similarly, when considering whether the proposed action is likely to result in an "adverse modification" of critical habitat, the status of the ESU is also relevant.

For this Opinion, NOAA Fisheries reviewed the current status of the populations affected by the proposed action in the context of viable salmonid population (VSP) criteria³ and then reviewed

³ Pursuant to NOAA Fisheries' current recovery planning, an ESU will have achieved conditions needed for its long-term survival and recovery when a sufficient number and distribution of populations in the ESU are "viable." Viable populations are those that are large enough to safeguard the genetic diversity of the listed ESUs, enhance their capacity to adapt to various environmental conditions, and enable them to become self-sustaining in the natural environment. McElhany *et al.* (2000) describes "viable salmonid populations" (VSP) as having a negligible risk of extinction due to threats from demographic variation (random or directional), local environmental variation, and

the status of each major population group before reaching a conclusion for an ESU. NOAA Fisheries based this analysis on information published in its June 14, 2004 Status Review (69 FR 33102), which states the reason for proposing to continue the listing of each ESU and any other relevant information about its status that constitutes the best scientific information available. In many cases, the status of an ESU was informed by the condition of habitat necessary to meet the species' biological requirements. Habitat attributes important to the species can be described in terms of physical, chemical, and biological parameters affected by the action under consultation (Habitat Approach, NMFS 1999).

In Step 1, NOAA Fisheries also reviewed the essential features of designated critical habitat, as described in the critical habitat designations. Critical habitat is currently designated for three Snake River (SR) salmon ESUs: SR spring/summer chinook, SR fall chinook, and SR sockeye salmon (see Section 2.1.4 for the status of critical habitat designations for eight other Columbia basin ESUs).⁴ The designations for these ESUs identify the following component areas: juvenile rearing areas, juvenile migration corridors, areas for growth and development to adulthood, adult migration corridors, and spawning areas. During these life-history stages, the fish obtain their biological requirements through access to essential features of critical habitat areas. Their biological requirements include adequate water quantity; water velocity; cover or shelter; food, air, light, minerals, or other nutritional or physiological requirements; riparian vegetation; substrate; space for population growth and normal behavior; safe passage conditions; and water quality⁵. These essential features of the currently designated critical habitat generally correspond to the habitat attributes that are associated with the biological requirements of all the listed species.

The definition of “destruction or adverse modification” provided by the consultation regulations directs that NOAA Fisheries evaluate whether the effects of the action cause “alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical.”

1.2.2 Step 2: Evaluate Relevance of the Environmental Baseline in the Action Area to Biological Requirements and the Current Status of the Species and Any Designated Critical Habitat

In this step, NOAA Fisheries analyzes the effects of past, present, and certain future human factors within the action area to which the effects of the proposed action would be added. The environmental baseline, together with cumulative effects (Step 4), provides the starting point for evaluating whether the action would cause, directly or indirectly, a reduction in the productivity, abundance, or distribution of the listed species. Also, Steps 1 and 2 collectively

genetic diversity changes (random or directional) over a 100-year time frame. The attributes associated with viable salmonid populations include adequate abundance, productivity, spatial structure, and diversity. These attributes are influenced by survival, behavior, and experiences throughout the entire life cycle, and these, in turn, are influenced by habitat and other environmental conditions. NOAA Fisheries established Technical Recovery Teams (TRTs) to describe the component populations in each ESU, viability criteria for each of those populations, and the number and distribution of populations that must be viable for an ESU to attain recovery.

⁴ The geographic extent of critical habitat designated for each of these species is described in Appendix A.

⁵ Specifically, the water quality parameters of interest in the mainstem portion of the action area for this consultation are Total Dissolved Gas (TDG) and temperature.

inform NOAA Fisheries' determination of whether reductions in abundance, productivity, or distribution associated with effects of the proposed action would "appreciably reduce" the likelihood of both survival and recovery. The worse the status of the ESU and the greater the current risk to the species within the action area under the environmental baseline, the more likely that additional adverse effects within the action area will appreciably reduce the likelihood of the ESU's survival and recovery.

The environmental baseline includes "the past and present impacts of all Federal, State, or private actions and other human activities in the action area, including the anticipated impacts of all proposed Federal projects in the action area that have undergone Section 7 consultation and the impacts of state and private actions that are contemporaneous with the consultation in progress" (50 CFR § 402.02). For this Opinion, NOAA Fisheries' consideration of these impacts is found in Section 5.0.

Following are the steps NOAA Fisheries takes to evaluate the relevance of the environmental baseline to biological requirements and the species' current status.

1.2.2.1 Define the Action Area

The action area defines the geographic scope of the environmental baseline and cumulative effects that are relevant to a particular consultation. It includes all areas affected directly or indirectly by the Federal action, not merely the immediate area involved in the action (50 CFR § 402.02). The action area is not delineated by the migratory range of the species affected by the project. Thus, the action area would not include areas to which affected fish migrate but which are otherwise unaffected by the action. NOAA Fisheries defines the action area for this Opinion in Section 5.0.

1.2.2.2 Determine Biological Requirements and Essential Habitat Features within the Action Area

Biological requirements can be expressed as those habitat conditions or survival rates within the action area that support a sufficient number and distribution of viable populations (i.e., populations with adequate abundance, productivity, spatial structure, and diversity) necessary for the survival and recovery of the ESU. When sufficient quantitative information exists, the best available scientific information indicates that these biological requirements can be estimated as the survival rates associated with properly functioning habitat conditions.

Alternatively, where survival rates cannot be measured, the biological requirements can be discerned from conditions described in the scientific literature as fully functioning and sufficient to support salmonid survival and recovery.

Range-wide, the biological requirements of an ESU needed for its long-term survival and recovery are a sufficient number and distribution of viable populations regardless of whether the proposed action is implemented. The factors that directly influence the viability of a population, and thus are relevant for NOAA Fisheries' assessment of its status within the action area, are the habitat conditions and survival rates associated with a properly functioning salmonid habitat. For

critical habitat, they are the designated essential physical and biological features. For this Opinion, the definition of these biological requirements is in Section 5.0.

1.2.2.3 Evaluate the Environmental Baseline Relative to the Biological Requirements and Species Status

The purpose of this step in the analysis is to assess the present and future “no action” conditions in the action area that would affect the listed species and critical habitat regardless of whether the proposed action is implemented. The present and future effects of the proposed action are eventually evaluated in the context of the action area environmental baseline.

Where the proposed action is a continuation of a past action, as is the case for the operation of the FCRPS, the analysis for this step is complicated, because the environmental baseline will necessarily include the effects of past actions taken to construct and operate the ongoing project. NOAA Fisheries must therefore distinguish the effects of the proposed future operation of the project from its past construction and operation. As described in more detail in Section 5.0, NOAA Fisheries made this distinction by following the fundamental principle of an ESA § 7(a)(2) consultation. Section 402.03 provides: “Section 7 and the requirements of this part apply to all actions in which there is discretionary involvement or control.” Accordingly, the ESA requires a Federal agency to consult on actions that it proposes to authorize, fund, or carry out that are within its discretionary authority. See also 50 CFR § 402.02 “*action*” and ESA § 7(a)(2). Conversely, the effects of the existing project that are beyond the current discretion of the action agency are properly part of the effects of the environmental baseline. Those effects are part of the “no action” environment to which will be added the effects of the proposed action.

Once NOAA Fisheries determined the effects of the environmental baseline, including the past effects of the FCRPS, it evaluated the significance of those effects in relation to the action-area biological requirements for the 13 ESUs⁶ considered in this Opinion. NOAA Fisheries evaluated reach survival through the mainstem hydro corridor (i.e., over sections or the entire reach between the upper end of Lower Granite Pool and the area immediately below Bonneville Dam). These reach survival estimates were developed using the tool of a ‘reference operation’ (described in Section 5.0) and were assumed to integrate the effects of habitat condition on fish survival and condition. To determine the relevance of the environmental baseline to the biological requirements of each ESU, NOAA Fisheries compared the estimates of reach survival under the environmental baseline to estimates of reach survival associated with properly functioning habitat conditions in the mainstem reach. Where such survival rates could not be measured, NOAA Fisheries compared habitat condition in the environmental baseline to the conditions described in the scientific literature as fully functioning and sufficient to support salmonid survival and recovery.

The current status of the species and its critical habitat in the action area is indicated by the extent to which conditions under the environmental baseline fall short of the species’ biological requirements. The species’ status in the action area is important for the determinations in Step 5,

⁶ Pursuant to Section 7(a)(4) of the ESA, BPA and the Corps have requested that NOAA Fisheries conference with them on the effects of hydro operations on LCR coho salmon, proposed for listing on June 14, 2004 (Wright and Grisoli 2004).

because it is more likely that any additional adverse effects caused by the proposed action will be significant if the species' status is poor and the baseline is already considerably degraded at the time of the consultation. Similarly, the status of habitat in the action area is a factor for determining whether an additional alteration of an essential feature of critical habitat would appreciably diminish the value of that critical habitat.

1.2.3 Step 3: Describe the Effects of the Proposed Action

Effects of the action, to be evaluated in Step 3, are defined as “the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with the action, that will be added to the environmental baseline” (50 CFR § 402.02). Direct effects occur at a project site and may extend upstream or downstream. Indirect effects are defined in 50 CFR § 402.02 as “those that are caused by the proposed action and are later in time, but still are reasonably certain to occur.” They include the effects on listed species of future activities that are induced by the proposed action and that occur after the action is completed. “Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration” (50 CFR § 402.02).

For the current consultation, this step involved identification and consideration of the adverse effects of the proposed discretionary operations of the FCRPS and USBR projects on the listed species and the essential features of their designated critical habitat. The proposed action also includes structural improvements to reduce mortality and non-hydro actions proposed to offset hydrosystem mortality by improving habitat conditions and survival. Finally, NOAA Fisheries evaluated the net combined effects of hydro operations and the non-hydro measures on the species and habitat.

For determining whether the action causes an alteration of an essential habitat feature that is likely to result in the destruction or adverse modification of designated critical habitat, NOAA Fisheries is using two alternative methods in the absence of a regulatory definition of this standard (see footnote #2, above.) The first method, the Environmental Baseline Approach, uses as a point of reference the environmental baseline to which the effects of the action will be added, as that term is defined by the “effects of the action” definition in the consultation regulations. If NOAA Fisheries determines that the proposed action is likely to alter an essential feature of critical habitat compared to the condition under the environmental baseline, it will then consider whether that alteration appreciably diminishes the value of critical habitat for survival or recovery. As with the jeopardy determination, this determination will be influenced by the status of the ESU and the degree to which existing environmental baseline conditions of the affected essential features meet the biological requirements of the species for survival or recovery.

As an alternative to this analysis of the § 7(a)(2) critical habitat standard, NOAA Fisheries will use the Listing Conditions Approach. To determine if the proposed action adversely alters an essential feature of critical habitat, NOAA Fisheries will alternatively refer to the condition of the essential feature (also known as a “primary constituent element,” or PCE) as it existed at the

time the species was listed.⁷ The essential feature will have been altered if the action reduces its function below that which existed at the time of listing. As with the first alternative, if there is an alteration of an essential feature of critical habitat compared to this reference point, then NOAA Fisheries will consider whether the alteration appreciably diminishes the value of critical habitat for survival or recovery. This determination will be influenced by the status of the ESU and the degree to which reference conditions for the affected essential feature at the time of listing met the biological requirements of the species for survival or recovery.

1.2.4 Step 4: Describe Cumulative Effects

The cumulative effects analysis in Step 4 requires NOAA Fisheries to evaluate the future beneficial or harmful effects of those state or private activities (not including Federal activities) that are reasonably certain to occur in the action area.⁸ Indicators that actions are reasonably certain to occur may include but are not limited to approval of the action by state, Tribal, or local agencies or governments (e.g., permits, grants); indications by state, Tribal, or local agencies or governments that granting authority for the action is imminent; a project sponsor's assurance that the action will proceed; obligation of venture capital; or initiation of contracts (USFWS and NOAA Fisheries 1998). At the same time, 'reasonably certain to occur' does not require a guarantee that the action will occur. However, the more state, Tribal, or local administrative discretion that remains to be exercised before a non-Federal action can proceed, the less NOAA Fisheries can be reasonably certain that the project will be authorized. Similarly, the more economic, administrative, and legal hurdles that remain to be cleared, the less NOAA Fisheries can be reasonably certain the project will proceed. For this Opinion, non-Federal actions that could not meet these standards were not included in the "cumulative effects" analysis.

Potential cumulative effects considered in this Opinion were identified in collaboration with states and Tribes that co-manage Columbia basin fisheries resources. NOAA Fisheries assessed whether the net impact of any cumulative effect would be to improve or degrade the baseline and estimated, to the extent practical, the magnitude of any change. If the status of the environmental baseline was very poor, but a suite of "reasonably certain to occur" actions was identified from which beneficial cumulative effects were likely, NOAA Fisheries tolerated a greater adverse effect from the proposed action before adjudging it an "appreciable reduction." By the same token, expected harmful cumulative effects from "reasonably certain to occur" actions reduced the tolerance level.

⁷ Critical habitat" is statutorily defined to include "the specific areas within the geographic area occupied by the species, at the time it is listed on which *are found* those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection." Since the physical or biological features that comprise the critical habitat were presumably present at the time of listing, the condition of the habitat at the time of listing can be used as a benchmark to determine whether the proposed action is likely to adversely modify those previously present features.

⁸ The past and present effects of non-Federal actions are part of the environmental baseline. The future effects of future Federal activities are part of the environmental baseline, provided they have undergone ESA Section 7 consultation.

1.2.5 Step 5: Conclusion

NOAA Fisheries determined whether it was reasonable to expect that the net effects of the action, when added to the effects of the “environmental baseline,” and “cumulative effects” in the action area would, directly or indirectly, appreciably reduce the likelihood of both the survival and recovery of the listed species or result in the destruction or adverse modification of designated critical habitat (50 CFR § 402.14(g)). As described above, the biological requirements and current status were the relevant factors indicative of the likelihood of survival and recovery.

If, in Step 3, NOAA Fisheries determines that the proposed action would either not affect or would result in a net improvement in survival or habitat condition for a given ESU, NOAA Fisheries would conclude that the action is not likely to jeopardize that ESU or adversely modify critical habitat. Because there would be no net reduction in the productivity, abundance or distribution of the ESU, there could not be an appreciable reduction in the likelihood of both survival and recovery in accordance with the regulatory definition of “jeopardize the continued existence of” (50 CFR § 402.02).

If NOAA Fisheries determines in Step 3 that the proposed action would reduce the abundance, productivity, or distribution of a given ESU compared to the environmental baseline, NOAA Fisheries then determines whether that reduction constitutes an appreciable reduction in the likelihood of survival and recovery. If so, NOAA Fisheries would conclude that the action would be likely to jeopardize the continued existence of listed species. This decision depends upon the magnitude of the reduction, the distribution of that reduction among component populations and major population groups within an ESU, the risk experienced by the ESU, both over its range and within the action area, and the amount of uncertainty presented by the data and scientific analysis available.

If NOAA Fisheries determines in Step 3 that the proposed action alters an essential feature of designated critical habitat compared to either of the two reference points (either the environmental baseline or the condition of the habitat at the time of listing), NOAA Fisheries then evaluates whether the alteration constitutes a destruction or adverse modification of designated critical habitat.

In determining whether an alteration of an essential feature of critical habitat compared to either of the reference points appreciably diminishes the value of critical habitat for survival or recovery, NOAA Fisheries considers the magnitude and duration of the alteration, the condition of critical habitat in the action area under the environmental baseline and cumulative effects, the purpose of the affected essential feature for survival and recovery, the status of the ESU across its range and within the action area, and the amount of uncertainty presented by the data and scientific analysis available.

If NOAA Fisheries determines that the proposed action is likely to jeopardize listed species or destroy or adversely modify critical habitat, it must, if possible, identify a reasonable and prudent alternative to the proposed action that would avoid these effects.